AMENDMENTS TO THE CLAIMS

The listing of claims presented below will replace all prior versions and listings of claims in the application.

Listing of claims:

1. (**currently amended**) A method for performing mobile IPv6 fast level 2 **handover** between access points (APs) and a mobile node (MN) and **optionally performing** layer 3 handover between access routers (ARs) and ~~**a mobile node (MN)**~~ **the MN**, each AR having a subnet composed of at least one access point (AP) that can interface between the MN and each corresponding AR, the method comprising the steps of:

receiving, at a given AR, a modified Router Solicitation (RS) message from the MN after completion of a layer 2 handover between the MN and ~~**the given AR**~~ **a newly connected AP**, the modified RS message having a message format comprising a 'C' flag **used for** signifying that a **current** Care of Address (CoA) is set and ~~**which the 'C' flag transmits**~~ **comprising** a source link-layer address option **used for indicating a layer 2 identifier of the MN**;

transmitting, from the given AR, a general Router Advertisement (RA) message to the MN when the **layer 2 identifier from the source link-layer address option of the modified RS message is found to be in a neighbor cache value of the given AR which corresponds to** layer 2 handover of the MN ~~**occurs**~~ between a previously connected AP **[[and a]] to the** newly connected AP such that the previously connected AP and the newly connected AP both belong to the same subnet of the given AR ;

~~wherein the general RA message transmitted from the given AR is for directing the MN to continue using the CoA set by the MN~~;

continuing to use the current CoA as a new interface address when the layer 2 identifier from the source link-layer address option of the modified RS message is found to be in the neighbor cache value of the given AR;

generating, at the given AR **[[,]] a modified RA message when the layer 2 identifier from the source link-layer address option of the modified RS message is found not to be in the neighbor cache value of the given AR such that the modified RA message comprises** a new CoA **which corresponds to** when layer 3 handover of the MN occurs between the previous connected AP and the newly connected AP such that the previously connected AP does not belong to a subnet of the given AR and the newly connected AP belongs to the subnet of the given ~~connected~~ AR;

replacing the current CoA with the new CoA as the new network interface address when the layer 2 identifier from the source link-layer address option of the modified RS message is found not to be in the neighbor cache value of the given AR;

performing, at the given AR **[[,]] a** Duplicate Address Detection (DAD) process **only when the layer 2 identifier from the source link-layer address option of the modified RS message is found not to be in the neighbor cache value of the given AR, such that the DAD process is used** to inspect a uniqueness of the new CoA wherein the performing step is performed subsequent to the generating step; and

transmitting, from the given AR to the MN, a modified RA message containing

the new CoA to update a network address of the MN, wherein the transmitting step is performed subsequent to the performing step.

2-3. (canceled)

4. (previously presented) The method as recited in claim 1, wherein the MN transmits the modified RS as soon as the layer 2 handover is complete.

5. (previously presented) The method as recited in claim 4, wherein movement of the MN in layer 3 is detected by the given AR when the given AR determines that the previously connected AP does not belong to the subnet of the given AR.

6. (canceled).

7. (previously presented) The method as recited in claim 1, wherein the modified RA message includes a flag which signifies the generation of the new CoA.

8-9. (canceled)

10. **(currently amended)** The method as recited in claim 1, wherein ~~**wherein**~~ the MN does not perform the DAD process after receiving the ~~**modified**~~ **general** RA **message**.